



Colloquium

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AN INTRODUCTION TO WITTEN'S HOLONOMY THEOREM

Friday, April 29, 2011

3:00 p.m. in ES-143

(tea & coffee at 2:30 p.m. in ES-152)

ABSTRACT. In the 1980's Daniel Quillen introduced determinant line bundles and about the same time Edward Witten derived a remarkable formula for the holonomy of the determinant line bundle of a Dirac operator using something called the "eta invariant" of Atiyah, Patodi, and Singer. In the physics literature, the holonomy of the determinant line bundle is called the "global anomaly". Witten's derivation was later made rigorous by Bismut and Freed and also by Cheeger.

In this talk I will give an introduction to eta invariants and Witten's holonomy theorem, and then I will discuss recent work concerning generalizations of this theorem to situations quite different from the original results. This talk will be suitable for a general audience.